



COMDTINST 6260.30

14 JAN 1994

COMMANDANT INSTRUCTION 6260.30

Subj: POLYURETHANE COATINGS EXPOSURE CONTROL

Ref: (a) Safety and Environmental Health Manual, COMDTINST M5100.47 (series)
(b) 29 CFR 1910.94, NOTAL
(c) Hazard Communication for Workplace Materials, COMDTINST 6260.21(series)
(d) Technical Guide: Practices for Respiratory Protection, COMDTINST M6260.2(series)

1. PURPOSE. This instruction promulgates administrative and engineering controls for the use of polyurethane coatings. This instruction applies to all Coast Guard air stations, the Aircraft Repair and Supply Center, the Aviation Training Center, Coast Guard cutters, and Coast Guard industrial activities which use polyurethane coatings for aircraft and buoy maintenance.
2. ACTION. Area and district commanders; commanders, maintenance and logistics commands; commanding officers of Headquarters units; Commander, Coast Guard Activities Europe; and chief of offices and special staff divisions at Headquarters shall ensure compliance with the provisions of this instruction.
3. DISCUSSION. Polyurethane coatings provide a weather- resistant, colorfast topcoat for protecting surfaces from abrasion and corrosion. These coatings have two components, a curing agent and a resin, which are mixed immediately preceding application. As these components react during curing, the polyurethane coating hardens.

14 JAN 1994

The main component of curing agents is an isocyanate compound. These coatings present no health hazard when cured, however, they do present a health hazard during preparation and application due to the release of isocyanate vapors. The isocyanates found in polyurethane coatings include Toluene Diisocyanate (TDI), Hexamethylene Diisocyanate (HDI), and Diphenylmethane Diisocyanate (MDI).

- a. **Personal Exposure.** Urethane and isocyanide vapors may cause irritation of the skin, eyes, or respiratory tract. In addition, persons exposed to isocyanates may become sensitized (allergic to isocyanates). Urethane may also cause persons who have skin exposure to become sensitized and develop allergic dermatitis. Once sensitized, subsequent exposure to very small amounts of isocyanates can cause severe allergic reactions which produce asthma-like symptoms.
- b. **Exposure Limits.** Reference (a) establishes a Threshold Limit value of 0.005 parts per million (ppm) as an 8- hour time-weighted average for TDE, MDI, and HDI. In addition, a 15-minute Short-Term Exposure Level (STEL) of 0.02 ppm has been established for TDI.
- c. **Authorized Use.** Two-part polyurethane coatings are only authorized for use on Coast Guard aircraft and as a topcoat paint for Aids to Navigation (ATON) equipment. These coatings and other types of polyurethanes containing isocyanates are not authorized for the exterior or interior of cutters and boats, ground support equipment, or any other equipment.

4. REQUIREMENTS.

- a. Protective Equipment.
 - (1) The following personal protection equipment (PPE) is required during the spray application of polyurethane coatings:
 - (a) Full-face, type C, continuous flow air-supplied respirator that meets the requirements of reference (d).
 - (b) Tyvek coveralls (Enclosure (1)).
 - (c) Solvent-resistant butyl rubber gloves (Enclosure (1)).
 - (2) For roller or brush application, use of the following PPE is required:

14 JAN 1994

- (a) Half-face air purifying respirator with organic vapor cartridges that meets the requirements of reference (d). Several studies have shown that air-purifying respirators are effective in preventing overexposure to isocyanate vapors. Inasmuch as the Permissible Exposure Limit is below the odor threshold for isocyanates, respirator cartridges shall be renewed daily to prevent isocyanate breakthrough.
 - (b) Tyvek coveralls (Enclosure (1)).
 - (c) Solvent-resistant butyl rubber gloves (Enclosure (1)).
 - (d) Safety goggles (Enclosure (1)).
- b. Safe Work Practices.
- (1) Paint Spray Booth. Whenever possible, the painting of parts such as individual aircraft panels or buoys with polyurethane coatings shall be done in a paint spray booth which meets the requirements of reference (b). Personnel without the PPE listed in Paragraph 4. a. (1), above, shall not enter spray booths for a minimum of 30 minutes following the application of polyurethane coatings.
 - (2) Hangar. For painting of aircraft with polyurethane coatings in hangars, personnel without the PPE listed in paragraph 4. a. (1), above, shall not be permitted to enter any portion of the entire maintenance bay for a minimum of 30 minutes following application.
 - (3) Spray painting outdoors. When applying polyurethane coatings outdoors, an area of 100 feet (minimum) in all directions shall be roped off. Personnel not wearing the required PPE as shown in paragraph 4. a. (1), above, are prohibited from entering this area while spray painting operations are in progress and for a minimum of 30 minutes following application.
 - (4) AToN Equipment. If cost effective and practical, polyurethane coatings should be applied by roller or brush to AToN equipment. This will significantly reduce the level of airborne isocyanates.
 - (5) Personal Hygiene. Personnel involved with the application of polyurethane coatings shall wash their hands and face or shower after using these coatings to remove any residual contamination from the skin.
- c. Harvard Communication. In accordance with reference with reference (c), the following shall be made available to personnel assigned to polyurethane coating operations:

14 JAN 1994

- (1) Material Safety Data Sheets for the polyurethane coatings used; and
- (2) Training which will include information on the hazards of polyurethane coatings.
- d. Respiratory Protection. In accordance with reference (d), affected units shall implement a Respiratory Protection Program.
- e. Medical Monitoring. In accordance with the requirements in Chapter 4 of the reference (a), personnel assigned to polyurethane spray painting operations for 30 or more days per calendar year shall be enrolled in the Coast Guard Occupational Medical Monitoring Program. Units should contract their servicing MLC (k) for enrollment procedures.

5. RESPONSIBILITIES.

- a. Commanding officers of units engaged in the application of polyurethane coatings shall ensure that the requirements of this instruction are implemented.
- b. Commanders of maintenance and logistics commands shall provide the necessary training and technical support to ensure that units comply with the requirements of this instruction.

/s/

ALAN M. STEINMAN

Chief, Office of Health and Safety

Encl: (1) Personal Protective Equipment Stock Numbers

14 JAN 1994

STOCK NUMBERS FOR PERSONAL PROTECTIVE EQUIPMENT

<u>ITEM</u>	<u>NSN</u>
Coveralls, disposable white, TYVEK material	
Small	8415-00-601-0793
Medium	8415-00-601-0794
Large	8415-00-601-0797
X-Large	8415-00-601-0801
Gloves, Butyl Rubber	
Small	8415-00-753-6551
Medium	8415-00-753-6552
Large	8415-00-753-6553
X-Large	8415-00-753-6554
Goggles, industrial, chemical splash	
One size	4240-00-190-6432

NOTE: Prior to ordering, check with your supply department to ensure accuracy of stock numbers.